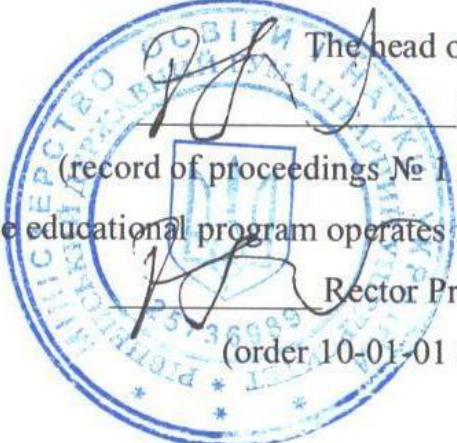


**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
RIVNE STATE UNIVERSITY OF THE HUMANITIES**

APPROVED BY THE ACADEMIC COUNCIL


The head of the Academic Council
Prof. R.M Postolovskyi
(record of proceedings № 1 dated January 27, 2022)
The educational program operates from September 1, 2022
Rector Prof. R.M. Postolovskyi
(order 10-01-01 dated January 27, 2022)

EDUCATIONAL AND PROFESSIONAL PROGRAM

"Secondary Education (Mathematics)"

Second (master's) level of higher education

in specialty 014 Secondary Education (Mathematics)

of the field of knowledge 01 Education/Pedagogy

Qualification: Master of secondary education, school teacher of mathematics.

LETTER OF COORDINATION

of the Educational and Professional Program

Secondary Education (Mathematics)

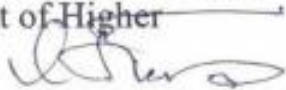
HIGHER EDUCATION LEVEL Second

DEGREE Master


FIELD OF KNOWLEDGE 01 Education/Pedagogy


SPECIALTY 014 Secondary Education (Mathematics)

QUALIFICATION Master of Secondary education, Teacher of Mathematics

Project Team Leader (Educational Program Guarantor): Yaroslav Petrivskyi,
Doctor of Technical Sciences, Professor, Head of the Department of Higher
Mathematics 

Program development team:

1. N.A. Siaska, Candidate in Pedagogy, Associated Professor, Department of
Mathematics and Methods of Teaching 

2. V.V.Silkov, Candidate in Pedagogy, Associated Professor, Department of
Mathematics and Methods of Teaching 

Stakeholders:

Natalia Volodymyrivna Sosiuk, headmaster of Rivne Regional Scientific Lyceum
of Rivne Region Council

Halyna Petrivna Tsiutsiura, headmaster of Rivne Secondary School for Levels I-III
№25 of Rivne City Council

INTRODUCED By the Department of Mathematics and Methods of Teaching
Record of proceedings № 10 dated November 18, 2021

The Head of the Department Associated Prof. O.V. Kraichuk 

COORDINATED

By the Academic Council of the Faculty of Mathematics and Informatics

Record of proceedings № 8 dated November 23, 2021

The Head of the Faculty Academic Council Ass. Prof. M.S. Antoniuk 

The Dean of the Faculty Ass. Prof. M.I. Shahaichuk 

The Head of the University Academic Council Prof. I.S. Voitovych 

Preamble

The educational and professional training program is a normative document regulating normative, competency building, qualifying, organizational, educational, and methodical requirements for the training of a bachelor in the branch of knowledge 01 Education / Pedagogy in specialty 014 " Secondary Education " and specialization " Mathematics ".

The educational and professional training program is based on the competency-building approach of training to obtain a Bachelor's degree in the branch of knowledge 01 Education / Pedagogy in specialty 014 " Secondary Education " and specialization " Mathematics ".

The educational and professional training program was developed before the implementation of the Standard for Higher Education of Ukraine for the appropriate level of higher education by the design team of Rivne State University of the Humanities. consisting of:

Project Team Leader (Educational Program Guarantor):

Yaroslav Borysovykh Petrivskiy, Doctor of Technical Sciences, Professor, Head of the Department of Higher Mathematics

Members of the Project Team:

Nataliia Andriivna Siaska, Candidate in Pedagogy, Associated Professor, Department of Mathematics and Methods of Teaching, Rivne State University of the Humanities.

Valerii Vasyliovych Silkov, Candidate in Pedagogy, Associated Professor, Department of Mathematics and Methods of Teaching, Rivne State University of the Humanities.

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Master's program profile
in the specialty 014 "Secondary education (Mathematics)"

1. General characteristics	
Full name of the institution of higher education and of the structural subdivision	Rivne State University of the Humanities
Degree of higher education and educational qualification	Master of Secondary education, Teacher of Mathematics
The official name of the educational and professional program	Educational and Professional Program in specialty 014 "Secondary Education (Mathematics)"
Type of diploma and the volume of educational and professional program	Master's degree. Unitary. 90 ECTS credits / 1 year 4 months
Availability of accreditation	According to the decision of the accreditation commission dated March 1, 2016 protocol № 120 (order of the Ministry of Education and Science of Ukraine dated 14.03.2016 № 434 l) in the field of knowledge (specialty) 01 Education / Pedagogy 014 Secondary education (Mathematics) is recognized as accredited at the bachelor's level (based on the order of the Ministry of Education and Science of Ukraine dated 19.12.2016 № 1565) Series ND № 1889764 Valid until 01.07.2026
Cycle /level	Ukrainian National Qualifications Framework – Level 8, FQ-EHEA – second cycle, EQF-LLL – Level 7
Preconditions	the first (Bachelor's) level of higher education, " Educational and qualification level "Specialist"
Language(s) of teaching	Ukrainian
Basic concepts and their definitions	The program uses the basic concepts and their definitions in accordance with the Law of Ukraine "On Higher Education" №1556-VII dated July 1, 2014, "Methodological recommendations on the development of higher education standards", approved by the order of the Ministry of Education and Science" dated June 1, 2016, №600.
Validity of the program of study	For the period of study
Internet address of the permanent placement of the educational program	http://fmi-rshu.org.ua/pages/informatyka-b7faf4b1-b886-472b-97e0-8f801020ee15 http://shu.edu.ua/

	2 - The purpose of the program of study
	To prepare highly qualified, professionally competent specialists who can work in educational institutions, able to organize the process of studying mathematics and computer science.
	3 - Characteristics of the program of study
Description of the domain (branch of knowledge, specialty)	<p>“Education / Pedagogy Secondary Education (Mathematics) ”</p> <p><i>The object of the study</i> is the Educational process in institutions of higher education (mathematics); partnership pedagogy, specified by the regularities of the goals, content, and technologies of teaching mathematics; interactive teaching methods aimed at individualization, intensification, and computerization of the educational process, the growth of the volume of independent work of students, the implementation of new forms, methods and technologies of learning that stimulate the development of creative qualities of future professionals.</p> <p><i>The goals of studying:</i> Theoretical and practical training of pedagogical staff for performing the professional activity in educational institutions of different levels of education, who possess modern methods and technologies of organization of the educational process, special (professional) and integral competencies.</p> <p><i>The theoretical content of the domain:</i> Methodological system of training of a specialist in mathematics; basic provisions of pedagogy and psychology; theory and methodology of teaching mathematics; theoretical foundations of mathematical sciences; standards of education quality.</p> <p><i>Methods, techniques, and technologies:</i> Pedagogical and mathematical models; pedagogical technologies of activating the educational process; problem-searching methods of teaching; methods of forming interest; organization of problem education; distance learning system.</p> <p><i>Tools and equipment:</i> Teaching and methodological manuals; visual aids; application of information and communication technologies in the educational process.</p>
Orientation of the program of study	The educational and professional program is focused on theoretical and practical training of teaching staff to perform professional activities in institutions of different levels of education, who have modern methods and technologies of the educational process, general and special (professional) competencies, ready for scientific evidence-based innovations

	in education.
The main focus of the program of study	Professional education in specialty 014 "Secondary education (Mathematics)". Keywords: pedagogy of secondary school; Mathematics, Higher Mathematics, elementary Mathematics, methods of Mathematics teaching, modern pedagogical technologies, educational information systems, multimedia systems, information and communication technologies.
	4 - Eligibility of graduates to employment and further studying
Employment	The primary positions: 2351.2 Teacher of Mathematics 2352 Inspector of teaching methods (Mathematics) 2359.2 Lecturer 2359.2 Educator-organizer
Further Education	The possibility to continue education according to the third level of the higher education training program –Doctor of Philosophy (mathematics and methods of teaching)
	5 – Teaching and evaluation
Teaching and learning	Teaching is carried out in the form of lectures, multimedia lectures, interactive lectures, seminars, practical classes, laboratory works, self-study, individual classes, consultations, practice, and preparation of master's papers.
Evaluation	Oral and written examinations, credits, defense of the practice reports, defense of master's paper, attestation.
	6 – Program competences
Integral competence	Ability to solve complex problems and practical problems in a certain field of professional activity or in the process of study, which involves research and application of certain theories and methods of the corresponding science and is characterized by complexity and uncertainty of the conditions.
General competencies (GC)	GC1 The ability to abstract thinking, analysis, and synthesis based on logical arguments and proven facts. GC2 The acquisition of flexible means of thinking, the openness to the implementation of knowledge and competencies in Mathematics and/or computer science in a wide range of possible work positions and everyday life. GC3 The ability to work in a team under a leader's supervision, to demonstrate the ability to take into consideration requirements of discipline, planning, and time management. GC4 The ability to use information and communication technologies efficiently.

	<p>GC5 Ability to direct oneself in a certain way to achieve important goals that will contribute to the development of knowledge through scientific research</p> <p>GC6 Knowledge and understanding of the subject area and understanding of professional activities.</p> <p>GC7 Ability to apply methods and techniques of teaching, methods of self-education methods for mastering modern knowledge.</p> <p>GC8 Ability to use state and foreign languages for effective communication and presentation of complex information in a concise form orally and/or in writing, including the use of numerals, letter designations, formulations mathematical concepts, and commonly used terms.</p> <p>GC9 Adherence to ethical principles both in terms of professional honesty and in terms of understanding the possible impact of achievements in mathematics and/or computer science on the social sphere.</p> <p>GC10 Ability to exercise their rights and responsibilities as a member of society, to realize the values of civil (free, democratic) society and the need for its sustainable development, the rule of law, human and civil rights, and freedoms in Ukraine.</p> <p>GC11 The ability to preserve and enhance the moral, cultural, scientific values and achievements of society based on an understanding of the historical and natural development of the subject area, its place in the general system of knowledge about nature and society, and in the development of society, technology and technologies, use different types and forms of physical activity for active recreation and healthy lifestyle.</p>
<p>Special (professional) competencies (PC)</p>	<p>PC1 Ability to understand the basic concepts, principles, theories, and results of mathematics.</p> <p>PC2 Knowledge of special mathematical terminology and the ability to convey it using mathematical notation.</p> <p>PC3 Ability to mathematical and logical thinking, formulation and research of mathematical and physical models, justification the choice of methods and approaches for solving theoretical and applied problems, in particular in the field of computer science, and the interpretation of the obtained results</p> <p>PC4 Ability to mathematically formalize the problem statement, consider different ways of solving it and demonstrate proficiency in mathematical reasoning, manipulation, and calculation.</p> <p>PC5 Willingness and ability to work with methodological and methodological-mathematical information.</p>

PC6 Ability to justify hypotheses and understanding of mathematical proof and the ability to demonstrate knowledge of various methods of mathematical proof.

PC7 Availability of a system of scientific knowledge in mathematical disciplines, methods of teaching mathematics in primary school, and the ability to apply them in solving practical problems.

PC8 Ability to solve a wide range of mathematical problems and tasks using mathematical tools and packages of mathematical software packages.

PC9 Ability to choose the necessary means, forms, and methods organization of student's activities in the learning process; ability to implement modern methods and technologies, innovative approaches, and advanced pedagogical experience in modeling and organizing educational activities in secondary education institutions.

PC10 Ability to provide an appropriate level of teaching mathematics and/or computer science in accordance with current curricula, following the requirements of the State Standard of basic and complete secondary education, and to carry out objective control and evaluation of the level of students' learning achievements.

PC11 Ability to conduct research on various processes, phenomena, and systems using mathematical methods and specialized software, conduct computational experiments, processing, analysis, and interpretation of the results.

PC12 Ability to expand and deepen their own scientific worldview, independently acquire and use in practical activities new knowledge, skills, and abilities, based on the knowledge gained in mathematics and computer science, including from fields not related to the sphere of professional activity.

PC13 Ability to ensure the organization of computing processes in information systems for various purposes, taking into account the architecture, configuration, performance indicators of functioning operating systems, selection and use of software general and initial purpose software.

PC14 Ability to reasonably select and use technology and tools of search engines, software, and information resources to create an educational information system educational institution.

PC15 Ability to analyze the results of scientific research, use them in the chosen profession, formulate directions of their own scientific research and find ways to solve them.

	<p>PC16 Ability to manage the research activities of students; generalize and systematize their own professional experience and present it in the form of reports, articles, speeches, etc.</p> <p>PC17 Ability to effective communicative interaction in different teams on issues of professional and related activities, including with the use of modern means.</p>
	<p>7 – Program outcomes of the study</p>
<p>Knowledge and competence in the subject area</p>	<p>POS1 Knowledge of the basic concepts and theoretical provisions of elementary and higher mathematics.</p> <p>POS2 Knowledge of ways, methods, and algorithms for solving problems in mathematics and/or computer science, to provide illustrations if necessary, examples, and counterexamples.</p> <p>POS3 Knowledge of the basic forms and laws of abstract-logical and system-combinatorial thinking, the basics of logic, forms and methods of analysis, synthesis, and other techniques of mental activity.</p> <p>POS4 Knowledge of forms, methods, and means of control and correction of students' knowledge of mathematics and/or computer science.</p> <p>POS5 Knowledge of the content of various types of extracurricular and extracurricular work in mathematics and/or computer science.</p> <p>POS6 Knowledge of lexical, grammatical, and stylistic features state and foreign vocabulary, terminology in the fields of mathematics and/or computer science, and grammatical structures for understanding and producing oral and written foreign texts in the professional sphere.</p> <p>POS7 Knowledge of methods of teaching mathematics and/or computer science, state standards in the subject area, content, and structure of the current school textbooks and other teaching materials, and the ability to analyze them.</p> <p>POS8 Knowledge of the requirements for methodological, didactic, technical, and software for general and educational purposes in mathematics and computer science classrooms.</p> <p>POS9 Knowledge of the principles, tools, programming languages, and methods of program development, web programming languages of modern Internet technologies, database technologies, and educational information environments; knowledge of opportunities and ability to use them in professional activities.</p> <p>POS10 Knowledge of modern technologies, scientifically based techniques, methods, and means of training.</p> <p>POS11 Knowledge of the content of the components of the</p>

<p>Skills</p>	<p>education system, components of self-educational activities, and the basics of research activities.</p> <p>POS12 Knowledge and understanding of the need to comply with the standards of a healthy lifestyle, principles of life safety, and occupational safety.</p> <p>POS13 Basic knowledge of the basics of philosophy, psychology, ecology, and sociology; awareness of national history, principles of ethics and human rights; understanding of cause and effect relationships in society, principles of teamwork, team values, and basics of conflictology.</p> <p>POS14 Ability to apply knowledge of higher and elementary mathematics when solving problems from the secondary school mathematics course, non-standard and olympiad problems, to form a scientific way of thinking of students.</p> <p>POS15 Ability to formulate definitions, axioms, and theorems in mathematics, justify and prove basic theorems and be able to apply them in solving specific mathematical and applied problems.</p> <p>POS16 Ability to form in students an understanding of the basics of mathematical modeling, readiness to apply modeling in solving problems and it is advisable to use packages of mathematical programs.</p> <p>POS17 Ability to determine the structure of the lesson of mathematics and/or computer science; to select appropriate forms, methods, and means of teaching in accordance with the didactic purpose of the lesson, taking into account: the age peculiarities of students, their level of learning and training, the specifics of the topic that studied.</p> <p>POS18 Ability to plan pedagogical activities, define and justify pedagogical tasks and apply the principles and methods of education in the pedagogical process, taking into account the age and physiological characteristics of students.</p>
<p>Communication</p>	<p>POS19 Ability to apply innovative technologies of organizational educational and cognitive and educational work to conduct pedagogical research, and creatively use advanced pedagogical experience.</p> <p>POS20 Ability to establish interdisciplinary and intra-subject connections in the study of specific topics of higher mathematics and school mathematics course.</p> <p>POS21 Ability to develop algorithms for solving problems in computer science, use modern ICT, information databases, web resources, and Internet services to develop their own</p>

<p>Autonomy and Responsibility</p>	<p>educational and methodological materials, professional development materials and to implement the principles of continuing education.</p> <p>POS22 Ability to form value orientations of students, to carry out pedagogical support of socialization processes in compliance with the norms of healthy lifestyle and principles of life safety, to prepare them for a conscious choice of life path and professional self-determination of students.</p> <p>POS23 Ability to find and analyze from a scientific and methodological point of view different technologies, methods, and educational resources in various sources of information, adapt them to the author's information and adapt them to the author's methodological system of teaching.</p> <p>POS24 To be able to carry out educational communication between participants of the educational process, perceive and convey educational and scientific information.</p> <p>POS25 Ability to improve with a high level of autonomy acquired during the training qualification and design directions for further professional growth and self-development.</p>
	<p>8 – Resource support for the implementation of the program</p>
<p>Staff support</p>	<p>Conducting lectures on academic disciplines by scientific and pedagogical employees of the relevant specialty who have a scientific degree and/or academic title, and work at the main place of work, is more than 50% of the number of hours determined by the curriculum, and who have a doctoral degree or academic title of professor - more than 25%.</p>
<p>Material and technical support</p>	<p>Material and technical support meets the licensing requirements for the provision of educational services in the field of higher education and is sufficient to ensure the quality of the educational process. Departmental premises with appropriate equipment and inventory, six computer laboratories equipped with computer equipment, united in a local network with access to the Internet; multimedia classroom and four multimedia projectors, and screens.</p>
<p>Information, educational and methodological support</p>	<p>The use of the information educational environment of Rivne State University of the Humanities and author's developments of the teaching staff.</p>
	<p>9 – Academic mobility</p>
<p>National credit mobility</p>	<p>Based on two-way agreements between Rivne State University of the Humanities and other higher educational institutions of Ukraine.</p>
<p>International credit</p>	<p>Rivne State University of the Humanities within the Bologna</p>

mobility	process actively exercises the right of participants in the educational process to academic mobility (semester training of students and internships teachers) at the Jan Dlugosz University in Czestochowa (Republic of Poland)
Study of foreign applicants of higher education	Possible

2. List of educational program components and their logical sequence

№ п/п	Code of discipline	Term	Component of the educational program (academic disciplines, practices, degree paper)	Number of credits	The Form of the Final Control
Compulsory components of the educational program					
The disciplinary cycle of the overall training					
•	OK1	1	Modern School Pedagogy	3	exam
•	OK2	1	Psychology of Educational Activity	3	credit
•	OK3	1	Foreign Language for Professional Purposes	3	exam
•	OK4	1	Methodology and Research Methods	3	credit
•	OK5	1	Computer and information technologies (in the field)	3	credit
The disciplinary cycle of professional training					
•	OK6	1	Functional Analysis	3	exam
•	OK7	2	General Algebra	3	credit
•	OK8	1	Mathematical Modeling	6	exam
•	OK9	2	Theoretical and methodological bases of teaching mathematics in secondary and higher educational institutions	6	exam
•	OK10	1	Innovative Approaches to Mathematics teaching	3	credit
•	OK11	1	Preparation of Degree Paper	12	
•	OK12	2,3	Professional (pedagogical) practice	18	credit
Selective components					
•	BK01 - BK03	3	Civil safety / Occupational safety in the industry / Choice	3	credit
•	BK04 - BK06	2	Philosophy and Methodology of Science / Social philosophy / Choice	3	credit
•	BK07 - BK08	3	Teaching Mathematics in specialized classes / Choice	6	credit
•	BK09 - BK11	2	History of Mathematics / Methods of nonlinear analysis / Choice	3	credit
•	BK12 - BK13	3	Media Education / Choice	3	credit
•	BK14 - BK15	3	Additional Sections of Elementary Mathematics / Elective	3	credit
•	BK16 - BK18	3	Solving Problems of increased complexity/. Application of Higher Mathematics to solving Olympiad Problems / Choice	3	credit

V. Matrix of correspondence of program competencies to the components of the educational program

	competence number in the list of generic competences of the profile program ()	competence number in the list of special competences program profile ()

- competence to be acquired

OK Compulsory components of the educational program

BK Selective components of the educational program

3K competence number in the list of generic competencies of the profile program

CK competence number in the list of the special competences program profile

VI. Matrix of providing program learning outcomes with relevant components of the educational program

	Program Learning Outcomes

Compulsory components of the educational program

Selective components of the educational program

Program Learning Outcomes

VII. Attestation

Student attestation is carried out by the examination commission after completion of training at the educational level to establish the actual compliance of the level of training with the requirements of the educational program. The student is certified according to the system of program learning outcomes, which is defined in the educational program of specialist training.

Form of attestation: defense of Master thesis.

The thesis involves analysis and theoretical development (modeling and research of processes and objects) of topical issues, and problems in the relevant field of knowledge. The topics of research papers in the specialty are determined by the graduation department at the beginning of the academic year. Subjects of theses should be directly related to the general object of the activity of a specialist of the corresponding educational level. The list of topics is approved by the order of the rector before the start of the graduation practice. Students have the right to propose their own topic for qualification paper.

The assignment for the thesis should reflect all the production functions and typical tasks of the specialist's work and must be promptly delivered to the student.

Consultants of thesis papers may be professors, associate professors, senior lecturers of the graduate department, as well as leading specialists in the relevant branch.

VIII. The system of internal higher education quality assurance

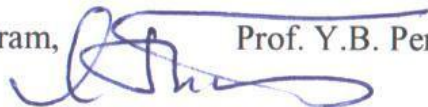
The Rivne State University of the Humanities operates a system for ensuring the quality of teaching and quality of higher education (the system of internal quality assurance) by a higher educational institution, which provides for the implementation of such procedures and measures:

1) definition of principles and procedures for ensuring the quality of higher education;

- 2) monitoring and periodic review of educational programs;
- 3) the annual evaluation of higher education, scientific and pedagogical staff of higher education institutions, and the regular publication of the results of such assessments on the official website of the higher educational institution, on information stands, and in any other way;
- 4) ensuring the professional development of scientific and pedagogical workers;
- 5) ensuring the availability of the necessary resources for the organization of the educational process, including the independent work of applicants for higher education for each educational program;
- 6) ensuring the availability of information systems for the effective management of the educational process;
- 7) ensuring publicity of information about educational programs, degrees of higher education, and qualifications;
- 8) ensuring an effective system of preventing and detecting academic plagiarism in scientific works of higher education institutions and higher education graduates;
- 9) other procedures and measures.

The system of providing higher education institutions with the quality of educational activities and the quality of higher education (internal quality assurance system) may, upon sub-mission by Rivne State University of the Humanities, be assessed by the National Agency for the Quality Assurance of Higher Education or by independent institutions accredited by it for the assessment and quality assurance of higher education for its conformity with the requirements to the system of quality assurance in higher education, approved by the National Agency for the Quality Assurance of Higher Education, and international standards and guidelines for quality assurance.

Guarantor of the educational program,
Project Team Leader



Prof. Y.B. Perivskyi